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(54) Title: CARCINOEMBRYONIC ANTIGEN FUSIONS PROTEINS AND USES THEREOF

(57) **Abstract:** Polynucleotides encoding carcinoembryonic antigen (CEA) fusion proteins are provided, the CEA fusion proteins comprising a CEA protein, or functional variant thereof, fused to a substantial portion of an immunoenhancing element. The polynucleotides of the present invention can elicit an immune response in a mammal, which, in preferred embodiments, is stronger than the immune response elicited by a wild-type CEA. The gene encoding CEA is commonly associated with the development of human carcinomas. The present invention provides compositions and methods to elicit or enhance immunity to the protein product expressed by the CEA tumor-associated antigen, wherein aberrant CEA expression is associated with a carcinoma or its development. This invention specifically provides adenoviral vector and plasmid constructs carrying polynucleotides encoding CEA fusion proteins and discloses their use in vaccines and pharmaceutical compositions for preventing and treating cancer.